

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-7 and 9-29 are now pending in this application.

Interview Summary

Applicant wishes to thank Examiner D'Aniello and Examiner Stoner for conducting the interview of March 3, 2009. In accordance with the request in the Interview Summary that the Applicant file a statement of substance of interview, Applicant notes that a proposal was made to amend claims 1 and 26 to recite a thickness of an oxide and/or hydroxide layer but not to amend claim 22 in this manner. With regard to claim 22, the step of increasing a thickness of an oxide and/or hydroxide layer was discussed during the interview.

Claim Objection

Claim 27 is objected to for containing informalities. Applicant respectfully submits that the amendments to the claims render this objection moot. Reconsideration and withdrawal of this objection is respectfully requested.

Rejection under 35 U.S.C. § 102

Claims 1, 2, 4, 5, 6, 9, 10, 16-18, 22, 24-26, and 28 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,844,777 to Werner (hereafter "Werner"). This rejection is respectfully traversed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally M.P.E.P. § 2131.

Claims 1, 2, 4, 5, 6, 9, 10, 16-18, 22, 24-26, and 28

Amended claim 1 recites a soldering workpiece comprising, among other things, a soldering workpiece, an oxide and/or hydroxide layer arranged at a surface of the soldering workpiece, and a solder layer, wherein the solder layer is directly applied to the oxide and/or hydroxide layer, wherein a thickness d of the oxide and/or hydroxide layer is greater than 25 nm. Claims 2, 4, 5, 6, 9, 10, and 16-18 depend from claim 1. The Office suggests on pages 3 and 10 of the Office Action that the former language of claim 1 includes a product by process limitation which, according to the Office, does not limit the scope of a final product and that the product disclosed by Werner is the same as that of claim 1. Although Applicant does not agree with this argument, claim 1 has been amended to recite, among other things, the inclusion of an oxide and/or hydroxide layer with a thickness greater than 25 nm.

Claim 26

Claim 26 recites a soldering workpiece comprising, among other things, a soldering workpiece, an oxide and/or hydroxide layer, and a solder layer, wherein the thickness of the oxide and/or hydroxide layer is greater than 25 nm.

Werner discloses fluxless brazing of aluminum in which the surface of an aluminum or aluminum alloy part is first pretreated by a chemical cleaning action to provide a “workably thin” oxide film. See Werner at col. 1, lines 8-52; col. 2, lines 18-30. Werner teaches that a practical, successful fluxless brazing can be performed if surfaces are pretreated by the chemical cleaning action to provide the “workably thin” oxide film to allow desirable wetting and flowing to produce a brazed joint. See Werner at col. 2, lines 18-34. Werner discloses that the oxide film is treated so that it is sufficiently thin to be penetrated by a fluxless filler alloy. See Werner at col. 2, lines 30-34.

The Office acknowledges on page 9 of the Office Action that Werner is silent regarding a thickness of the “workably thin” oxide film. Thus, Werner does not disclose the soldering workpiece of claims 1 and 26 because Werner does not disclose that a “thickness d of the oxide and/or hydroxide layer is greater than 25 nm,” as recited in each of independent claims 1 and 26. Furthermore, Applicants note that the teachings of Werner as a whole include a teaching to minimize oxide film thickness by active treatment steps in direct contrast to the presently claimed invention.

Claims 22, 24, 25, and 28

Claim 22 recites a soldering process for joining at least two workpieces to one another comprising providing a soldering workpiece made from aluminum and/or aluminum compounds, increasing a thickness d of an oxide and/or hydroxide layer arranged at a surface of the soldering workpiece to a thickness sufficient to provide contact between a soldering compound and the soldering workpiece underneath the oxide and/or hydroxide layer during a subsequent soldering process, introducing inhomogeneities into the oxide and/or hydroxide layer, and soldering the soldering workpiece to another workpiece. Claims 24, 25, and 28 depend from claim 22.

The Office suggests on page 10 of the Office Action that Werner discloses a step of increasing a thickness of an oxide and/or hydroxide layer arranged at a surface of a soldering workpiece to a thickness sufficient to provide contact between a soldering compound and the soldering workpiece underneath the oxide and/or hydroxide layer during a subsequent soldering process, as recited in claim 22, because the “workably thin” oxide film of Werner would inherently increase in thickness because aluminum naturally forms an oxide layer in any ambient atmosphere. Applicant respectfully disagrees.

To rely upon inherency, a basis in fact and/or technical reasoning to reasonably support the determination that an allegedly inherent characteristic necessarily flows from the disclosure of the prior art must be provided. See MPEP § 2112, Part IV, *citing Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Any inherent disclosure may not be established by probabilities or possibilities. See MPEP § 2112, Part IV, *citing In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Claim 22 not only recites an active step of increasing the thickness of an oxide and/or hydroxide layer arranged at a surface of a soldering workpiece, but providing the soldering workpiece. Thus, any oxide formed under ambient conditions, as argued by the Office, would already be present when the soldering workpiece is provided. Furthermore, although aluminum may naturally form an oxide film in an ambient atmosphere, such an oxide film does not increase in size under the ambient, equilibrium conditions argued by the Office. Nor does the Office provide any basis in fact and/or technical reasoning to support an argument that Werner inherently discloses a step of increasing the thickness of an oxide and/or hydroxide layer, as recited in claim 22. In fact, as discussed above, Werner specifically

teaches that an oxide film should be treated to be “workably thin” so that a practical, successful fluxless brazing can be performed. Thus, Werner fails to disclose an active step of increasing a thickness of an oxide and/or hydroxide layer, as recited in claim 22.

For at least the reasons discussed above, reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claim 3

Claim 3 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Werner as applied to claim 1, and further in view of U.S. Patent No. 3,986,897 to McMillan *et al.* (hereafter “McMillan”). This rejection is respectfully traversed. McMillan fails to remedy the deficiencies of Werner discussed above in regard to independent claim 1, from which claim 3 depends.

Claims 7, 11-13, 15, and 20

Claims 7, 11-13, 15, and 20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Werner as applied to claim 1, and further in view of U.S. Patent No. 3,747,199 to Swaney, Jr. (hereafter “Swaney”). This rejection is respectfully traversed. Swaney fails to remedy the deficiencies of Werner discussed above in regard to independent claim 1, from which claims 7, 11-13, 15, and 20 depend. Furthermore, Swaney regards a brazing process, which involves different considerations than a soldering process, such as higher processing temperatures relative to soldering. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 14 and 21

Claims 14 and 21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Werner as applied to claim 10, and further in view of U.S. Patent No. 5,618,357 to Knepper *et al.* (hereafter “Knepper”). This rejection is respectfully traversed. Knepper fails to remedy the deficiencies of Werner discussed above in regard to independent claim 1, from which claims 14 and 21 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 23, 27, and 29

Claims 23, 27, and 29 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Werner as applied to claim 22, and further in view of U.S. Patent No. 3,666,869 to Orecchia (hereafter “Orecchia”). This rejection is respectfully traversed.

The Office suggests on page 9 of the Office Action that although Werner is silent in regard to the thickness of an oxide film that it would have been obvious to modify the process of Werner by the teachings of Orecchia to provide an oxide film with thickness of up to four tenths of a millimeter. Applicant respectfully disagrees because Werner teaches against such a modification. Applicant notes that the prior art must be considered in its entirety, i.e., as a whole, including disclosures that teach away from the claims, and that references cannot be combined where references teach away from their combination. See MPEP § 2141.02, Part VI; 2145, Part X(D)(2).

As discussed above, Werner teaches that a practical, successful fluxless brazing can be performed if surfaces are pretreated by the chemical cleaning action to provide the “workably thin” oxide film to allow desirable wetting and flowing to produce a brazed joint. See Werner at col. 2, lines 18-34. Werner discloses that the oxide film is treated so that it is sufficiently thin to be penetrated by a fluxless filler alloy. See Werner at col. 2, lines 30-34. Thus, Werner teaches against any modification to increase the thickness of the an oxide film because Werner teaches the desirability and need to keep the oxide film “workably thin” for a successful fluxless brazing process.

Furthermore, the modification argued by the obvious would not have been obvious to one of ordinary skill in the art because such a modification would destroy the principle of operation of the product of Werner because it would provide thicker oxides, not “workably thin” oxide films. See MPEP § 2143.01, Part VI.

For at least the reasons discussed above, it would not have been obvious to modify the process of Werner by the teachings of Orecchia, as suggested by the Office. Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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